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ABSTRACT

Problem solving, decision making, and constructing knowledge are skills students need to become active and responsible citizens. However, many students are not receiving these essential skills from their education. Minority students in particular, despite improved academic performance, still perform well below national averages. Restructuring schools to meet students' needs will require a rethinking of curriculum and instruction. A review of research challenges seven common assumptions about intelligence, teaching, and learning. Schools that focus on the needs of the learner construct all resources around attaining high achievement for all students. Strong administrative leadership, family-teacher collaboration, and effective classroom management are all characteristics of an effective school environment. There are several recommendations for improving instruction and curriculum: basing decisions on informed research; supporting inquiry, consultation, and cooperative collaboration; and stressing achievement for all students. Staff development should be ongoing and an integral part of the school's philosophy. Recommendations are also offered for assessment, student grouping, school organization, student support, and family involvement. A list of resources for educational improvement and journals for teachers is included. (JPT)

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From the Commissioner

Helping students to become life-long learners has always been a primary goal of schooling. Today we are challenged to achieve educational excellence for the diverse student populations our schools serve. All graduating students must have a strong grasp of reading, writing, and computational skills as well as be able to think critically, problem-solve, and synthesize information in order to succeed in our increasingly global society. This requires us to rethink our approaches to teaching and learning from pre-school through grade twelve to ensure that all students are successful.

The research described in this document represents a step toward accumulating a data base on the features and effects of instructional practices that assist all students to achieve at high levels. Individual students learn in different ways and at varying rates. A major task for schools is to provide educational experiences that accommodate these differences and that optimize each student's learning opportunities. Educating all students well requires careful scrutiny of the effects of labeling, curriculum differentiation, grouping strategies, and commonly held beliefs about learning and intelligence.

This advisory, *Structuring Schools for Student Success: A Focus on Instructional Improvement*, through an examination of current research on instructional practice as well as some recommended practices, is one step in initiating a dialogue and generating discussion on this important topic.

Robert V. Antonucci

Robert V. Antonucci
Commissioner of Education

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INTRODUCTION

Students who are prepared to be active and responsible citizens in a democratic society need learning experiences in which they actively construct knowledge, solve problems, make decisions, and collaborate with fellow learners and workers.

Students who are prepared to be active and responsible citizens in a democratic society need learning experiences in which they actively construct knowledge, solve problems, make decisions, and collaborate with fellow learners and workers. A primary goal of schools, then, is to help students become increasingly able and willing to guide their own learning throughout their lives. Current indicators suggest, however, that schools are struggling to adequately prepare many of our students. Approximately 20-25% of the student population are regarded as achieving below grade level and in need of some type of educational support services.[1] Other reports indicate that the majority of students are not being provided with meaningful and challenging instruction and do not acquire higher order thinking and problem solving skills to be successful in later life. Despite recent reports of their improved performance in some academic areas, many black, Hispanic, and low-income students continue to perform well below the national average on all measures of achievement, and are over-represented in dropout rates, disciplinary referrals, low-ability tracks, grade retentions, special education referrals, and Chapter 1 programs.[2]

A rethinking of curriculum and instruction, including the basic tenets we hold about what we should teach, how we should teach it, and how we should assess what students learn is the cornerstone for restructuring schools.

- How do teacher expectations and school organization influence what and how students learn?
- How can we create curricula and instructional approaches that build on all students' strengths, broaden their skills, and challenge their thinking?
- How can grading and assessment be reshaped to reflect broader notions of learning and demonstration of knowledge?
- What changes in curriculum, instruction, and assessment are needed to support the integration of all students into the regular education classroom?

This advisory attempts to answer these questions by presenting a summary of recent research on curriculum and instruction, with particular emphasis on factors that improve learning for all students. Recommendations are offered on successful strategies to educate all students at high levels, regardless of backgrounds. It is hoped that this advisory will assist superintendents, school committees, principals, teachers, counselors, families, students, and community members in assessing current curriculum and instructional practices and in planning how to most effectively meet the educational needs of all students.

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REVIEW OF THE RESEARCH: WHAT DOES IT SHOW?

The diversity of learning styles as well as achievement levels that students display have always presented challenges for educators. This section examines seven common assumptions about teaching and learning through reviewing the research in these areas.

ASSUMPTION 1: *Innate intelligence is the strongest predictor of a student's academic achievement.*

What the Research Shows:

A. Intelligence is more complex in its relationship to how students learn than has historically been recognized.

Historically, intelligence has been understood to be an innate, fixed ability that individuals are born with; that is, some individuals are born "smarter" than others. Within this definition of intelligence, a person's accomplishments are pre-determined by the limits on his/her ability. Intelligence viewed in this way may result in differentiated teacher expectations of individual students as well as modifications to the curriculum and instructional pace.[3]

... individuals possess a blend of intelligences that emerge over time and are strengthened by varied learning settings and experiences.

Recent research on development and cognition suggests that individuals possess a blend of intelligences that emerge over time and are strengthened by varied learning settings and experiences. These intelligences can be translated into learning strengths and developed in the classroom to enhance achievement. Howard Gardner, for example, in his *Theory of Multiple Intelligences*, describes linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal intelligences.[4] Similarly, James Comer cites five dimensions of student development that are critical to student achievement: social-interactive, psychological-emotional-affective, moral, speech and language, and intellectual-cognitive-academic.[5] Achievement is enhanced when all students have opportunities to learn across all dimensions of intelligence and development. Central to these views of intelligence is the belief that differences in student achievement may

come not only from innate differences in ability, but from a student's level of effort and perseverance, each of which the school can encourage and teach.[6]

B. Students' performance in school is more closely related to motivation and perceptions of self-competence than from direct measures of intelligence.

Successful learning experiences strengthen students' perceptions of self-competence and personal control, enhancing the desire to learn new skills, whereas repeated failures weaken these perceptions.[7] Students who believe that they can influence their learning are consistently more likely to accept challenges, persist on tasks, and achieve at higher levels.[8] Student motivation and performance increase when the student can link personal effort or a specific learning strategy to a successful learning outcome. Attributions for achieving success or failure are especially relevant to the motivation of low-achievers and important determinants of their future expectations.[9] Students who attribute failure to not using the proper strategy or not contributing the optimal effort, for example, are more likely to re-attempt a task than students who attribute failure to lack of intelligence or ability.

Students who believe that they can influence their learning are consistently more likely to accept challenges, persist on tasks, and achieve at higher levels.

Effective teachers focus not only on teaching skills and knowledge, but also on developing motivation for students to use them. Student motivation is optimally fostered when a teacher emphasizes learning and progress over performance and ability.[10] This includes setting learning goals, identifying strategies for achieving them, and providing frequent opportunities for success and feedback. In classrooms where student achievement is high, students are given opportunities to practice newly acquired concepts in a context that views errors as a natural and important part of the learning process.[11]

C. Individual learning styles strongly influence what and how students learn.

Learning style preferences develop over time and determine what a student perceives and how she/he perceives it. Differences in learning styles depend on many things: family background, self-perception, individual preferences, and home/school environment. Developmentally, most children have strong tactile and kinesthetic strengths in the primary grades, with visual learning developing in

third to fourth grade and auditory strength typically developing by fifth to sixth grade.[12]

Students at every grade level learn more effectively, retain what they learn longer, and enjoy learning more when instructional strategies that match their individual learning styles are used.[13] Thus, in a classroom of students with diverse learning styles, the use of multiple instructional strategies improves student achievement. For example, when instructional strategies have been matched to the reading styles of poor readers, these students often make gains in reading comprehension at two to ten times their former progress within a school year.[14] Also, after having been shown how to study and do homework through their learning style strengths, students at varying achievement levels have demonstrated significant increases in achievement, improved attitudes towards school, less tension in classes, and increased retention of information.[15]

D. Teacher expectations and instructional strategies have a strong impact on student learning and academic achievement.

Teachers who are successful in reaching all students, including students who are low achievers, combine a sense of their own efficacy with high, realistic expectations for student achievement.

Teachers who are successful in reaching all students, including students who are low achievers, combine a sense of their own efficacy - or confidence in their ability to influence student learning and motivation - with high, realistic expectations for student achievement.[16] High efficacy teachers are more likely to view students who are low achievers as teachable and worthy of their attention. These teachers assume a stronger sense of responsibility for the achievement of difficult learners than do low efficacy teachers. When asked about the cause of a student's not learning a skill, high efficacy teachers tend to place the cause within the teaching; that they "were not using the right method," or that they "needed to try something else," rather than attributing failure to the student's ability level or performance.[17]

High efficacy teachers use a greater variety and number of teaching strategies, including positive feedback, cooperative learning strategies, and peer tutors to provide individualized instruction. In addition, they refer fewer students to special education.[18] These teachers create classroom environments characterized by few teacher interventions, rare criticism of students, a focus on instruction, and a high amount of time on task.[19]

ASSUMPTION 2: ***Family/cultural background, home environment, and socioeconomic status are the strongest determinants of student achievement.***

What the Research Shows:

A. Student achievement is the result of many interacting factors, specifically student, teacher, classroom, instructional, school district, and home characteristics.

Students from low socioeconomic backgrounds are more likely to face a wider range of stressful life situations, including housing problems, victimization by crime and discrimination, lack of health care, and financial difficulties. Poverty can cause developmental and health problems in students, and can lead to poor school attendance.[20] Because of the conditions of poverty, these students may not always have access to preschool education or a parent or adult who can read with them and help with homework, or who can afford to provide enriching activities.

Poverty in and of itself does not determine student achievement. ... the most effective schools can produce successful learners regardless of their background.

Yet, there is much that is known about helping students from low socioeconomic backgrounds succeed in school. Poverty in and of itself does not determine student achievement. Studies have demonstrated that the most effective schools can produce successful learners regardless of their background. For example, a study comparing 50 elementary schools that were effectively educating low-income students and students of culturally and linguistically different backgrounds with 50 providing ineffective education, identified the following factors as characteristic of the effective schools: 1) strong instructional leadership; 2) agreed upon sets of goals and high expectations for academic achievement of all students; 3) maximum teacher time devoted to teaching; 4) a social and physical climate conducive to learning; 5) frequent monitoring of student progress; and 6) family involvement.[21]

Another study comparing middle schools serving mainly low-income, low-achieving students with those serving primarily high-achieving students and students from middle-income families identified an imbalance in educational offerings as a contributing factor to differing educational outcomes.[22] The students from more advantaged backgrounds received more comprehensive curriculum

and instructional strategies, a broader range of electives and extra-curricular activities, and more parent involvement programming, than did students from less advantaged backgrounds.

By perceiving a student's low socioeconomic status or race/ethnicity as a deficiency, educators may miss the strengths of the environments and cultures from which many of these students come. These misperceptions can result in lowered expectations and misdiagnosis of abilities.[23] For example, while many low socioeconomic status students may enter school with weak pre-reading and writing skills, they often have strong verbal, visual, and manipulative skills. Or, building on the native language strengths of those students whose first language is other than English can help them learn to read and write. Thus, effective teachers build on students' experiences while simultaneously challenging and guiding them to expand their repertoire of experience and skill.

B. Academic failure of low socioeconomic students and students of different linguistic and cultural backgrounds may be attributed to a mismatch between the home and school culture/environment.

Student performance is affected by norms of communication in and out of the school setting. Lisa Delpit has found that students cannot learn effectively when classroom communication patterns related to asking questions, taking turns, and seeking information from both peers and teachers are unfamiliar to them.[24] This is especially true for students from low socioeconomic backgrounds and students of culturally and linguistically different backgrounds, as many school climates and cultures reflect the culture of the dominant society.[25] Preferred ways of interacting that fall outside the cultural norm may be mistakenly identified as indicators that these students are not effective learners.[26] Connecting classroom learning activities in higher order thinking skills with these students' cultural knowledge and experiences improves comprehension skills as well as performance in reading and the acquisition of literacy.[27]

Low achievement frequently results when educators have little or no knowledge of the assumptions rooted in cultural and family backgrounds that students bring to the classroom.

Low achievement frequently results when educators have little or no knowledge of the assumptions rooted in cultural and family backgrounds that students bring to the classroom.[28] Conversely, professional development that encourages teachers to examine

their own cultural assumptions, to deepen their understanding and respect for ideas, practices, and perspectives different from their own, and to gain experience interacting and working with people from a variety of cross-cultural settings can provide a learning context that assists students of diverse cultural backgrounds to achieve at high levels.

C. Cooperative efforts between families and schools to improve academic conditions in the home and at school have strong, beneficial effects on learning.

Academic gains result when schools involve families in their children's education. Families who maintain frequent contact with their children's school have higher achieving children than families who have infrequent contact.[29] Schools that are well connected with the community tend to have higher-achieving students than schools with fewer ties.[30] Families who become involved in their children's schooling tend to develop more positive attitudes towards their children's teachers, rate teachers higher in interpersonal and teaching skills, and perceive teachers as wanting to help their children. Involved parents/families tend to enlist the support of others, become actively involved in community issues, and further their own education.[31]

Most families want to help their children, are willing to be active participants in their children's learning, and implement suggestions offered by teachers.

Home environments influence learning characteristics. A child's self-concept, aspirations, and motivation are all influenced by family values.[32] Some families have the skills to foster both cognitive growth and achievement motivation in their children. More importantly, families who do not have these skills can readily acquire them. Most families want to help their children, are willing to be active participants in their children's learning, and implement suggestions offered by teachers.[33] Joyce Epstein has found that schools can increase family involvement and impact academic achievement of students through teaching families how to support their children's education at home, training parents to advocate for their children, including parents in school governance processes, and recruiting parents to be engaged in classroom activities.[34]

Working with the New Haven Public Schools, James Comer and his colleagues have focused on enhancing the social context for teaching and learning, particularly by improving relationships among staff, students, and parents. This has resulted in the integration into the school culture of powerful social networks that nurture

and develop the child in the home and community. As a result, student achievement has risen while many parents have continued their own education.[35]

ASSUMPTION 3: *Teacher-centered instruction enhances the educational outcomes of all students.*

What the Research Says:

A. Teacher-centered instruction is a mismatch with many students' learning styles and can impede academic achievement.

Whole group, teacher-centered instruction that relies solely on lecture, textbooks, and individual seatwork assignments is often a mismatch with students whose learning styles are tactile, visual, experiential, and interactive. This can result in lowered achievement, reduced expectations for success, lowered intellectual curiosity, lack of interest and commitment to learning, and less effort and persistence on tasks.[36] Yet, studies of American classrooms reveal that the vast majority of them are organized along the lines of whole-group instruction. Less than 1% of classroom time is given over to questions that require complex student thought or responses while nearly 60% of a student's time is spent listening to a teacher, doing a written exercise, or preparing for an assignment.[37]

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Teacher-centered instruction can also increase the use of negative comparisons of students' ability and social status. Reliance upon teacher-centered instruction that is often solely outcome-focused creates a heightened sense of competition between students in a classroom. An over-reliance upon competition in learning situations can accentuate perceptions of individual differences, orient students towards displaying superiority over others, and foster a climate in which student concerns about ability - that is, looking "smart" or avoiding looking "dumb" - dominate.[38]

B. Interactive, student-centered learning better reflects how most students learn and can significantly increase academic achievement for all students.

Interactive learning that includes cooperative, peer group, and project learning foster greater intellectual curiosity, a desire to seek out more information on the topic at hand, positive attitudes towards learning, high expectations for success, persistence on tasks, and higher achievement outcomes.[39] Inherent in cooperative structures is a concept of shared efforts, goals, and rewards among students.

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The higher the percentage of students talking and working together on well structured assignments, the greater the average learning gains.[40] In these settings, students learn from other students as they do from teachers, particularly with respect to decision-making skills. Yet, cooperative, student-centered instruction is the norm in only 7-20% of our classrooms.[41] The social, interactive setting can provide opportunities for modeling effective thinking strategies and for helping students reflect on their own learning. For example, in a peer tutoring setting, while tutees benefit from individualized attention, tutors learn by reviewing, reinforcing, and reformulating material, as well as from the opportunity to see learning from a different vantage point.

Student-centered learning strategies can help teachers address individual needs and teach high content material in academically, linguistically, and culturally diverse classrooms. For example, major gains have been documented in the acquisition of basic skills and English proficiency in bilingual classrooms in which students worked together in groups at learning centers, experimenting and solving challenging problems in mathematics, physics, and chemistry.[42] Students with special needs who are placed in mainstreamed interactive learning settings make greater academic progress and exhibit better social skills than those who remain in more restrictive settings.[43] Furthermore, recent research on gender bias in public schools has identified student-centered and cooperative learning strategies as powerful techniques in raising girls' academic achievement and self-esteem.[44]

Elizabeth Cohen has found that central to the success of student-centered instructional strategies is the belief that students' different backgrounds, experiences, skills, cultures, and languages create a

rich community for learning. Students' range of knowledge and skill levels are accommodated not by giving them different material to master, but by working out varying approaches to the same material so that all students are challenged to use spatial, visual, reasoning, and role-playing abilities.[45] Students are trained to take on increasing responsibility for their learning, using one another as resources, asking for and receiving the help they need. Each student plays a specific role in the group, such as facilitator or reporter, and students are given individual and group assignments. The teacher's role in these classrooms is to identify the strengths, talents, interests, and concerns of each student in the class, and to confer status to every student through praise and other forms of recognizing accomplishments.[46]

ASSUMPTION 4: *Sequential mastery of basic skills is a pre-requisite to the acquisition of higher order thinking skills.*

What the Research Says:

A. A focus on higher order thinking skills often results in higher academic gains for all students.

Students are likely to learn and remember as much or more factual content when instruction focuses on higher-order mental processes and complex real-life tasks as when it emphasizes low-level, mechanical learning.[47] Students who have the opportunity to actively apply and practice new concepts experience significant academic gains.[48] For example, the highest academic gains in reading, writing, mathematics, and science are found in classrooms where students are guided in developing thinking, learning, and problem-solving skills that can be applied across content areas. Middle grade students who are low-achievers in mathematics have been found to strengthen their basic operational skills at a far greater rate when placed in an algebra class rather than in a general mathematics remedial program.[49]

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Though students must become fluent in some basic skills in order to acquire the knowledge foundation they need for higher order processing and application of information, those who learn material solely through drill and whole group instruction often cannot

apply these concepts within new contexts.[50] For example, mathematics instruction often focuses on memorizing the fundamentals of mathematics, without learning how and when these concepts, principles, and strategies may be useful in solving problems. Similarly, most remedial programs, including Chapter 1 and special education pull-out programs, emphasize the mechanics of basic skills without providing the problem-solving opportunities that motivate students.[51] A central problem in educating non-English speakers and limited-English proficient students is an over-emphasis on mastery of low-level mechanical skills and a neglect of comprehension, thinking, and higher-order processes required in real-life contexts.[52]

There is little evidence to suggest that younger students and students who are low achievers must learn lower-order skills before learning higher-order skills.

There is little evidence to suggest that younger students and students who are low achievers must learn lower-order skills before learning higher-order skills. For example, primary students can learn to summarize, clarify, question themselves, and regulate their learning processes in important ways.[53] Successful instructional strategies use problem-solving experiences to help primary students develop discrete skills in the context of achieving meaningful goals.

B. Successful thinkers and problem solvers differ from the less successful in their tendencies to use the particular skills that they possess.

Children engage in thinking at a very early age and expand their knowledge based on what they already know through ongoing interaction with people, materials, and the physical and social environment.[54] Learning to walk and talk are examples of this complex process. Throughout childhood mental structures and perceptions are continually reshaped and expanded by new experiences. Understanding of new concepts is enhanced by providing repeated opportunities to solve real problems so that contradictions between one's thinking and the reality of the world can be resolved.[55]

Thus, acquisition of skills and strategies alone does not make a student a competent reader, writer, problem solver, or thinker. The habit or disposition to use the learned skills and strategies, and the knowledge of when to apply them, also need to be developed.[56] This ability is often referred to as self-regulated learning. Self-regulated learners acquire knowledge that less effective learners do

not, which assists them in achieving at higher levels.[57] This includes teaching students strategies for accomplishing learning tasks efficiently and for developing metacognitive abilities, an awareness and understanding of the knowledge they have acquired.

Metacognitive skills include clarifying the purposes of learning, focusing on major content, as well as engaging in inquiry, reflection, and in corrective action.[58]

ASSUMPTION 5: ***Curriculum that is presented in separate, distinct subject areas provides optimal conditions for student learning.***

What the Research Says:

Knowledge and skills are more likely to develop in the context of an integrated curriculum that creates meaning through fully interacting with a student's world.

The traditional scope and sequence approach to curriculum, with its emphasis on isolated academic disciplines, does not reflect current knowledge of human learning and fails to provide significant numbers of students with higher-order thinking and problem solving abilities.[59] In addition, departmentalization does not provide teachers the capacity for cooperative planning needed to achieve integration of learning experiences.

Effective curriculum is based on sound theoretical principles of how children learn, and is derived from the needs, knowledge, life experiences, and interests of individual students. Lessons in which learners perceive links among main ideas are more likely to result in content learning than are lessons in which those links are not as apparent to the learners.[60] Learning is more meaningful and longer lasting when it results from efforts to find answers to interesting questions. This is also the case when a teacher, in introducing new material, identifies a starting point that is inside the range of perception, understanding, experience, or knowledge of the student. For example, James Beane documents that early adolescents learn best when the curriculum is derived from thematic units representing salient concerns and issues of early adolescents

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(e.g. transition, identities, social structures, conflict resolution, justice, and caring).[61]

Students retain information longer, transfer concepts learned across disciplines, and apply newly learned concepts more readily to real-life situations when curriculum is interdisciplinary, thematic, and based on common learning outcomes.[62] In a recent study conducted to determine students' attitudes toward integrating curriculum across subject areas, it was found that interdisciplinary units appealed to students because they provided an integration of content material that made the subject matter more meaningful.[63] The students' self-reports indicated that integrating skill development and content across subject areas was motivating, challenging, and fun. Students also believed that incorporating a variety of activities, offering them choices, and providing opportunities for them to share their knowledge through projects promoted learning. However, effective integrated learning can only occur when teachers are provided with common planning time to plan, develop, and deliver integrated curriculum across multiple subjects and learning areas.

ASSUMPTION 6: ***Standardized testing of minimum competencies provides teachers and parents with up-to-date measures of students' strengths, weaknesses, and educational progress.***

What the Research Says:

A. Standardized tests used in isolation are not accurate measures of students' learning or of how effective teachers are and may result in educational practices that are harmful.

More than 20 million school days are devoted to taking standardized tests in elementary and secondary schools each year with an estimated 105 million standardized tests administered per year.

Standardized testing is more widespread today than at any time in our country's history. More than 20 million school days are devoted to taking standardized tests in elementary and secondary schools each year with an estimated 105 million standardized tests administered per year.[64] Forty-four states require some form of minimum competency achievement testing in their elementary and secondary schools.[65] Standardized testing is most prevalent in large urban school districts that serve larger than average propor-

tions of students from culturally and linguistically different backgrounds and students from low-income families.[66]

There are many equity-related concerns regarding standardized tests. Standardized tests are frequently the basis for selection and retention in educational programs, ability groups or tracks, and grade levels.[67] Because these tests tend to reflect the language, culture, and learning style of middle- to upper-class whites, students from low-income, culturally, and linguistically diverse backgrounds tend to score poorly on them.[68] Based partly on test scores, disproportionate numbers of students from low-income families and from culturally and linguistically different backgrounds are placed in vocational, remedial, and special education classes while disproportionate numbers of white middle- and upper-class students are placed in advanced classes.[69]

Standardized tests do not effectively support or enhance instruction. An ongoing emphasis on standardized test scores often narrows the curriculum to those basic skills that can be easily measured on multiple choice tests, thus diminishing the intellectual challenge and content of the curriculum.[70] The use of standardized tests in kindergarten and first grade can contribute towards emphasizing drill and practice on isolated academic skills, resulting in early childhood experiences tainted by struggle and failure.[71]

Although schools place a high priority on standardized test-taking, educators, parents, and students, when given a choice, rank cooperation, critical thinking, self-reliance, constructive attitudes, and life-long learning above standardized test scores and grading.

Because of the way standardized tests are constructed, students are placed in a passive role, rather than engaging their capacity to think critically, structure tasks, produce ideas, and solve problems. Several studies have demonstrated that the teaching behaviors that are effective in raising scores on standardized tests are nearly the opposite of those behaviors that are effective in developing complex cognitive learning, problem-solving ability, and creativity.[72] Although schools place a high priority on standardized test-taking, educators, parents, and students, when given a choice, rank cooperation, critical thinking, self-reliance, constructive attitudes, and life-long learning above standardized test scores and grading.[73]

B. New ways of teaching and learning require new ways of assessing student progress that better define what students should learn, help teachers be more effective, and increase student commitment to learning.

In classrooms that emphasize effective instruction of higher order cognitive skills, assessment of student progress is based on mastery of essential skills and knowledge. In these classrooms, changes in the curriculum necessitate changes in the methods used to assess student progress that (1) provide students, teachers, parents, and administrators with in-depth information about a student's progress and classroom activities; (2) enable students to participate in assessing their own work; and (3) form the basis for evaluating the quality of a student's overall performance.[74]

Exhibitions and portfolios can incorporate written, oral, visual, independent, and group work, allowing students to display different strengths and mastery of material in different ways. This process of reflecting on one's work requires critical thinking by the student, thereby enhancing academic gains.[75] Curriculum-based assessment is used to monitor and evaluate progress toward the acquisition of primary concepts. Rather than solely measuring performance, feedback through the use of interactive assessment can assist with problem solving in teaching and learning, which, in turn, enhances students' capacity to regulate their own learning.

Exhibitions and portfolios provide feedback to the teacher on not only what a student knows, but on how that student learns best, and can stimulate teacher creativity and refinement of instruction to the benefit of all students.

Assessment as a process of observing, recording, and documenting the work students do and how they do it can be of great help to instruction and learning. Exhibitions and portfolios provide feedback to the teacher on not only what a student knows, but on how that student learns best, and can stimulate teacher creativity and refinement of instruction to the benefit of all students.[76]

ASSUMPTION 7: *Traditional forms of school organization and grouping of students benefit student learning.*

What the Research Says:

A. There are school structures and policies that impede the ability of many students to learn and achieve at high levels.

Approximately 83% of Massachusetts schools report that students are grouped by ability in math, and 66% of students are grouped by ability in English.

(Source: MASS DOE 1991 Teacher Census Survey Data)

Ability Grouping and Tracking. Rigid ability grouping and tracking practices have been found to lower achievement for low- and middle-ability-grouped students, undermine their self-esteem, and contribute to higher dropout rates.[77] Inherent within ability grouping and tracking is the belief that some students are smart, other students are average in intelligence, and still others are not so smart; and that students should be sorted accordingly so that they may receive curriculum and instruction suitable to their needs.

Such a system often creates differentiated expectations of students based upon how they are grouped. Teachers of students in low-ability groups plan less, establish a minimum workload, accept distractions, emphasize sequential, lower-order cognitive skills, and rarely ask students to think critically.[78] In these classes, teachers' low expectations often become self-fulfilling prophecies for low-performing students, thereby contributing to a cycle of failure.

Grade Retention. Similar to ability grouping, grade retention is a practice that lowers academic achievement, undermines self-esteem, and increases dropout rates for most grade-retained students. Grade retention is not successful in its stated purpose of accelerating student achievement; grade-retained students are rarely placed back with their grade-appropriate peers.[79] Grade retention is often accompanied by low teacher expectations, little additional support, a primary focus on discrete basic skills, a slower pace of instruction, and a curriculum divorced from any meaningful context; all factors that contribute to continued low achievement. In fact, when compared with their grade-retained peers, low-achieving students who are promoted usually outperform them, even without additional support.[80] Grade retention as a practice often faults the students for not achieving, rather than

seeking to identify instructional factors that may have contributed to a student's low achievement and strategies for accelerating student progress.

Pullout Services and Programs. Chapter 1, special education, and other remedial services and programs, in which targeted students may be pulled out of the regular education classroom to receive supplementary educational services, are intended to enhance instruction and raise achievement. However, in many cases, low-achieving students who receive pull-out services achieve far less than their counterparts who receive those same services integrated within the regular education classroom.[81]

The lack of structured opportunities for teachers to plan jointly can contribute to low academic achievement through curriculum fragmentation, lack of consistent goals and objectives among teachers, and reduced opportunities for exposure to new instructional strategies .

Chapter 1 and special education pull-out classes tend to demonstrate the same characteristics and reduced learning expectations of low-ability-grouped classrooms and tracks that result in lowered academic achievement. Pulling students out of the regular education classroom results in fragmentation of the school day, thereby increasing students' difficulty in assimilating new material. In addition, labelling of these students by teachers and peers can undermine their self-esteem.[82] There are a few pullout programs which have demonstrated high academic gains for students. These programs, as distinguished from most pullout programs, are characterized by a focus on higher-order cognitive skills, close coordination with the regular education teacher, and a finite length of the program.[83]

Teacher Isolation and School Schedule. The lack of structured opportunities for teachers to plan jointly can contribute to low academic achievement through curriculum fragmentation, lack of consistent goals and objectives among teachers, and reduced opportunities for exposure to new instructional strategies and innovative curriculum ideas that other teachers may be using.[84] The traditional seven-period-a-day secondary school schedule often precludes using proven student-centered instructional strategies such as cooperative or project learning, as these strategies require longer periods of time to accomplish than the traditional class period allows.

B. There are also school structures and policies that enhance the ability of many students to learn and achieve at high levels.

Increased Use of Heterogeneous Grouping. Heterogeneous grouping of students in well-structured classrooms, coupled with an emphasis upon interactive and cooperative group learning, has been found to raise the achievement of all students, regardless of current achievement level or formerly assigned ability group. Heterogeneous grouping allows a student to work with a diverse group of students and encourages teachers to set high expectations for all students, thereby increasing the access to high quality instruction for everyone. Changing grouping practices alone, however, does not result in raised achievement; heterogeneous grouping must be accompanied by significant changes in what is taught and how it is taught.[85]

Integration of Supplementary Educational Services into the Regular Education Classroom. Rather than pulling students out of class for Chapter 1, special education, and other specialized services, educational support services can be integrated into the regular education classroom. This facilitates lower teacher student ratios through team-teaching, collaborative teacher, or teacher consultation approaches. It also provides teams of teachers with the flexibility to experiment with cooperative group learning and other student-centered, interactive instructional strategies, and ensures continuity of instruction for students. Such strategies have been found to raise achievement levels of targeted students at a rate significantly greater than receiving the same services within a pullout class.[86]

Sixty-four percent of Massachusetts schools report that less than 50% of their staff are released for professional development days during the school year.

(Source: MASS DOE 1991 Teacher Census Survey Data)

Clustering and Staff Teaming. Clustering creates a sense of community and belonging, thereby enhancing the learning climate and allowing students to develop more meaningful relationships with their peers and teachers. Staff teaming, in which staff receive common planning time to coordinate curriculum and monitor student progress, reduces teacher isolation and increases their effectiveness with students.[88] Clustering and teaming have been found to result in more integrated curriculum, less fragmentation of the school day, and increased monitoring of individual student progress.[87]

Block scheduling allows teacher teams the flexibility to schedule the school day and week to best suit the curriculum and learning needs of students, and can ensure an uninterrupted block of time each day for interdisciplinary courses and activities.[88]

Structures that provide enhanced support to students' social and emotional growth and development - such as Student Support Teams, mentoring, and teacher advisor programs - can also enhance achievement by promoting student self-esteem and providing forums to gain support and guidance.[89]

Staff Development and Support. Staff development that is staff designed and includes time for reflection, discussion, observation, and follow-up is a critical component in facilitating instructional innovation and increased achievement. Principals and central office administration are also key in creating expectations and norms that support experimentation and reward collaboration. The development of core values or a school mission statement can often coalesce a school staff around common high expectations for all students, resulting in a school climate of learning and increased achievement.[90]

CONCLUSION

Schools as centers of inquiry are places in which both students and teachers are the learners, and where learning is an active process that takes place in many different ways.

Schools as centers of inquiry are places in which both students and teachers are the learners, and where learning is an active process that takes place in many different ways. The needs of the learners are central to the design, structure, culture, norms, and activities of these schools. Time, space, instruction, and staff are organized to help all students achieve high levels of success. Instruction in such schools requires not only the development of skills and a sound knowledge base, but also the capacity to make complex decisions, identify and solve problems, and relate theory to practice and outcomes.

By virtue of certain policies, practices, organizational structures, and staffing, some schools are more effective than others in maintaining high levels of student success. Instruction is most effective in promoting high academic gains in a school environment characterized by norms of collegiality and continuous improvement fostered by strong administrative leadership, family-teacher collaboration, and effective classroom management. Schools that create a climate that values equal access to knowledge for every student and in which there is a commonly held belief that all students can learn at high levels, influence teachers' beliefs concerning their own abilities to succeed in improving the achievement of all students.

WHAT SCHOOLS CAN DO: RECOMMENDATIONS FOR INSTRUCTIONAL IMPROVEMENT

Based on the research summarized in this document, the Massachusetts Department of Education offers the following recommendations to assist districts in implementing practices that encourage all students to achieve at high levels.

RECOMMENDATIONS FOR PLANNING

1. The goal in planning for change is to create a professional culture in schools in which instructional and curricular decisions: (a) are based on informed research; (b) support inquiry, consultation, and cooperative collaboration; and (c) establish a primary concern for the successful achievement of all students. To this end, an inquiry/planning team should identify and analyze the following aspects of the existing educational program:

   - The school's goals or educational philosophy;
   - The school's organization, including, for example, placement, class size, and grouping practices;
   - Educational enrichment and support programs available or currently used by the school, including Chapter I, special education, bilingual, and gifted and talented;
   - Current curriculum, instructional, and assessment practices; and
   - Family and community support.

Do our current practices support high achievement of all our students?

   Use this data to discuss the following questions:

   - Who are the students we are teaching?
   - What values, resources, and strengths do they bring to school?
   - What do we want our students to learn?
   - Do our current practices support high achievement of all our students?
   - How do we create curricula that nurture, strengthen, and build on students' backgrounds?

- What are instructional approaches that build in meaningful learning experiences, challenge students' thinking, and broaden their skills?
- What implications do new forms of assessment have on what we teach and how we teach?
- What school structures support achievement of all students?

2. Distribute the results of your assessment and encourage public discussion.

3. Visit other schools that have successfully implemented school-wide approaches that have led to improved curriculum and instruction.

4. Develop and implement a school-wide plan, using a participatory process, for improving curriculum and instruction.

RECOMMENDATIONS FOR STAFF DEVELOPMENT

A good staff development program for teachers is a model of a good learning environment for students; seeing both students and teachers as learners promotes the idea of a school as a learning community.

A good staff development program for teachers is a model of a good learning environment for students; seeing both students and teachers as learners promotes the idea of a school as a learning community. **A staff development program should include:**

1. **Staff development as an ongoing, continuous, and integral part of the school's vision that includes:**

   - Developing a mission statement for staff development;
   - Building collaborative teams responsible for various aspects of staff development;
   - Informing staff about research on effective learning environments;
   - Collective involvement in decision making;
   - Time to learn and assimilate new knowledge and skills; and
   - Coaching and follow-up consultation.

2. **Staff development series designed to help teachers:**

   - Match learning styles with instructional strategies to accommodate the diversity of a heterogeneously grouped classroom;
   - Identify cultural and socioeconomic backgrounds of the school's student population, including examination of common, societal stereotypic beliefs of what students can and cannot achieve based upon their background;
   - Review current research on teacher expectations and develop strategies to raise expectations for all students, while providing the necessary support (e.g. peer observations) to implement these strategies in the classroom;
   - Make the transition from homogeneous to heterogeneous grouping; providing help with phases of change that the class will experience, suggestions of instructional strategies that will accommodate more diverse groups of learners, and follow-up in the form of peer support groups and peer observations;
   - Team staff, with support for team-building, functioning as a team, developing interdisciplinary curriculum, scheduling, monitoring student progress, and team teaching strategies;
   - Integrate student-centered instruction into the classroom, including cooperative, peer group, and project-based learning; and
   - Learn and evaluate the use of appropriate technologies to incorporate as teaching tools and strategies.

RECOMMENDATIONS FOR CURRICULUM AND INSTRUCTION

1. **Adopt a curricular and instructional framework that includes the following as general goals and priorities:**

All students can attain high levels of knowledge in various subject areas.

   - All students can attain high levels of knowledge in various subject areas;
   - All students can develop a repertoire of cognitive and applied learning skills and strategies that enable them to take increased responsibility for their own learning;
   - All students can develop an awareness of the nature of thinking and of their capacities to influence their attitudes towards learning and development; and

- All students can develop standards for evaluating their own progress.

2. Develop a concept-based, common core curriculum for all students that reflects the following principles:

- Provides meaningful, intrinsically interesting subject matter curricula that is relevant to students' lives;
- Respects cultural and linguistic diversity;
- Expects, allows, and appreciates individual differences;
- Supports vocational-academic integration; and
- Promotes positive relationships with families.

3. Facilitate the integration of content across traditional subject matter areas in an interdisciplinary, thematic manner that includes:

- Broadly conceived themes with subtopics that incorporate traditional subject areas;
- Use of an inquiry process to develop themes;
- Integration of primary source material within the curriculum;
- Use of the community as a learning laboratory for thematic curriculum;
- Construction of diverse learning opportunities for students at different developmental levels and with varying achievement levels; and
- Learning technologies that expand the opportunities of teachers, students, and parents to connect school activities with those in homes, community centers, and other institutions.

Thematic, interdisciplinary curriculum can develop from questions that arise in any subject area and then lead naturally to inquiry in other areas.

Thematic, interdisciplinary curriculum can develop from questions that arise in any subject area and then lead naturally to inquiry in other areas. It is not always necessary that theme studies across the whole curriculum comprise an entire course of study. Often, a school team will begin with one major theme study per semester or even per year, and gradually increase the number.

4. **Integrate the following components** into all areas of instruction:

   Defined instructional goals that:

   - Articulate clear and specific goals for instruction;
   - Ensure a match between the student's learning needs and the instruction delivered; and
   - Guide students in pursuing both group and individual goals.

   Instructional strategies that:

   - Create meaningful contexts to involve students actively in learning activities;
   - Encourage the use of prior knowledge in assimilating new information;
   - Represent new information in oral and written language;
   - Use technology to provide opportunities for students to use mediums most compatible to their learning styles as well as to work with complex connections across content areas; and
   - Provide opportunities to transfer and apply what is learned to new areas.

5. **Increase the use of active learning pedagogy and student-to-student instructional strategies** that require multiple abilities of students. Build in incentives for student group interaction, while establishing cooperative group work as an important value. Increase the use of:

Build in incentives for student group interaction, while establishing cooperative group work as an important value.

   - Cooperative learning;
   - Project-based learning;
   - Peer tutoring;
   - Learning centers;
   - Process writing; and
   - Cross-age learning opportunities.

   Student-centered learning views heterogeneity as a resource. The teacher's role in facilitating this includes:

   - Assigning students to groups that are heterogeneous and allow students of different ethnic backgrounds, gender,

achievement levels, and socioeconomic groups to work together;
- Explaining to students the goals and tasks to be undertaken, as well as assigning group roles;
- Arranging the room so that members of a learning group sit close enough to each other to share materials and talk to each other;
- Providing appropriate directions, materials, supplies, and equipment;
- Observing student-to-student reactions and intervening as needed;
- Ensuring that all students within each group are publicly recognized for their contributions to the group, with the goal of increasing students' status in the group; and
- Evaluating group and individual products using established criteria.

RECOMMENDATIONS FOR ASSESSMENT

View assessment not as a single snapshot of student development and achievement but as an integral part of teaching and learning that encourages every student to realize her or his potential of best work.

1. **Take steps to reduce the reliance on standardized intelligence, achievement, and readiness tests.** View assessment not as a single snapshot of student development and achievement but as an integral part of teaching and learning that encourages every student to realize her or his potential of best work.

2. **Evaluate current grading procedures** to determine the extent to which they reflect students' best work as well as help them see learning as an evolving process. Work towards adoption of assessment and reporting methods that promote student learning and provide better measures of student progress. **Employ assessment procedures that reflect the ongoing life of the classroom** and rely on demonstrated performance during real activities. Utilize an array of tools and processes that include the following:

   - Collections of representative work by students;
   - Records of systematic observations by teachers;
   - Records of conversations and interviews with students; and
   - Teacher summaries of students' individual and group progress.

3. **Routinely and informally assess students' learning in all domains** using assessment strategies that:

   - Measure multiple dimensions of student development;
   - Encourage and support each student in progressing towards mastering new instructional content at a pace suited to her or his achievement levels and interests;
   - Provide explicit feedback regarding the accuracy or inaccuracy of students responses and inform students of their progress toward mastery of instructional objectives;
   - Generate data useful for instructional improvement;
   - Provide information that can be shared with parents; and
   - Are free of linguistic, cultural, or gender bias.

4. **Design assessment methods that provide continuous information on students' progress as they move through a curriculum** and that encourage the development of a student's best work. As a record of a student's process of learning, the assessment portfolio is an effective means to record the learning process; how she or he thinks, questions, analyzes, synthesizes, produces, creates, and interacts.

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An assessment portfolio is a collection of a student's work that demonstrates a student's efforts, progress, and achievement over time, providing a comprehensive view of student performance in context. Development of a portfolio involves the student and teacher in compiling the materials, discussing them, and making instructional decisions. Work samples are a major component of the assessment portfolio and may include:

   - Students' writing, drawing, and problem-solving exercises;
   - Photographs of any project work;
   - Notes and comments by students about their own work or activities;
   - Copies of journal pages;
   - Drawings or illustrations inspired by music;
   - Tape recordings of students reading their work; and
   - Video recordings of special projects, events, or performances.

Portfolios contain both works in progress and a student's best work that reflects multiple drafts. Work samples may be part of the student's daily activities or may specifically relate to current

instructional or curricular objectives. Once the portfolio is organized, the teacher can evaluate the student's achievements, which may include a student presentation of their work. Appropriate evaluation always compares the student's current work to the same student's earlier work, and not to the work of other students. This assessment should reflect the student's progress toward a standard of performance that is consistent with a teacher's curriculum, instructional goals, and articulated expectations of student achievement.

RECOMMENDATIONS FOR GROUPING OF STUDENTS

1. **Consider the following principles as guidelines** to use whenever decisions are being made to group students for instruction. Instructional grouping should:

   - Promote improved academic achievement;
   - Provide equitable access to curriculum, enrichment opportunities, and varied instructional approaches;
   - Enhance student self-esteem; and
   - Promote interaction between diverse groups of students.

2. **Frequently employ heterogeneous small group learning situations.** Within-class groups need not be permanent, but should be periodically reassessed and reconfigured to provide students with opportunities to work with a diverse range of other students. Groups can be formed according to interests or learning style rather than perceived ability.

Within-class groups need not be permanent, but should be periodically reassessed and reconfigured to provide students with opportunities to work with a diverse range of other students.

3. **Create multi-grade classrooms** to increase opportunities for peer tutoring and cross-age groupings of students.

4. **Decrease the use of pull-out classes** that provide students who are low achievers with supplementary and special education resource room instruction. Instead, team regular education teachers with special education and Chapter 1 teachers to design instruction that will boost the academic achievement of students who are low achievers, while lowering the teacher-student ratio in regular education classrooms.

5. **Employ strategies to increase the chances that students with special needs** will succeed in regular education that include:

   - Expanding existing public school integrated early childhood programs, and increasing linkages with private early childhood programs;
   - Identifying and developing settings in regular education that can successfully accommodate students with special needs;
   - Designing better placement criteria to ensure successful integration;
   - Developing integrated opportunities for students with special needs to acquire academic and non-academic skills required for successful participation in the regular classroom and in the community;
   - Integrating resource room teachers and counselors into the regular education classroom; and
   - Conducting staff development programs on integration.

RECOMMENDATIONS FOR SCHOOL ORGANIZATION

Develop a mission statement for the school that articulates the school's belief that all students can learn and achieve at high levels.

1. **Develop a mission statement for the school** that articulates the school's belief that all students can learn and achieve at high levels.

2. **Emphasize the role of principal as an instructional facilitator** who has influence in creating a school climate of respect, treating others with dignity, and providing support.

3. **Create a shared decision-making model of school governance** that includes parent, teacher, administrator, community, and student representation. This group makes decisions and recommendations over a wide range of school areas including resource allocation, curriculum, programming, and policy development. Grant the school's Student Council a similar mechanism for voicing input on these issues.

4. **Structure the school around cross-discipline teacher teams** that work with designated clusters of heterogeneously grouped students. Provide these teams with common planning time to

develop an interdisciplinary approach. Provide these teams with control over scheduling and encourage them to design blocks of time for learning that allow for a problem-solving approach to instruction. Consider grouping students in clusters for more than one year.

5. **Schedule the school day at the secondary level** to consist of longer learning blocks and fewer courses to create more optimal learning conditions.

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RECOMMENDATIONS FOR STUDENT SUPPORT

1. **Create a peer tutoring program**, and engage a range of older students, including those who have discipline, attendance, and achievement problems, in working with younger students.

2. **Create advisor-advisee programs** to provide students with increased peer and adult support, while also giving them a forum in which to discuss issues of concern. Include all students in these programs and group them heterogeneously.

3. **Develop a comprehensive program of after-school services** that operates until 6:00 p.m. each weekday. As part of this plan, offer a voluntary before school, after school, or Saturday Homework Center offering instructional support to students as well as activities coordinated with community agencies.

4. **Form a Student or Teacher Support Team**, composed of an adjustment counselor, guidance counselor, teacher, administrator, special education teacher, community agency representative, psychologist, and nurse to provide case management services to identify students who are low achievers and in need of additional support. For each identified student, develop an individual plan of services for her/him. Monitor the progress of each student regularly. Use this structure to strengthen the capacity to provide school-site counseling and prevention services, including crisis intervention tutorials, short-term counseling, and teacher consultation.

5. **Develop a mentor program** in collaboration with local higher education institutions and/or businesses in which mentors are

paired with students and meet with them weekly to provide instructional, social, and emotional support.

6. **Develop and implement a summer enrichment program** that enrolls both low- and high-achieving students and that combines enrichment instruction, computer-assisted instruction, outward bound experiences, advisor-advisee groups, and work experiences for secondary school students. These types of summer programs have resulted in up to half-year gains in reading and mathematics achievement and can offset the learning loss that accounts for much of the learning difference between advantaged and disadvantaged students.[94]

RECOMMENDATIONS FOR FAMILY INVOLVEMENT

1. **Provide multiple opportunities for family involvement** in the school that include:

Provide multiple opportunities for family involvement in the school.

- Extending a warm welcome to and demonstrating respect for all families;
- Eliciting from families knowledge about the student, the student's culture, and the families' views and values in order to match classroom instructional strategies to individual student needs;
- Parent/family representation on school governance structures;
- Opportunities for parents/families to assist in the classroom;
- Parent/family participation in the study of various curriculum materials, educational approaches, and new programs;
- Parent/family participation in principal and teacher selection (while helping them to learn how to do it effectively); and
- Providing parents/families with apropriate strategies for helping children learn at home.

2. **Hold meetings at various times of the day or evening** to provide flexibility for families who work various schedules and for families who live far away to attend. Consider conducting meetings at locations in the community that are

comfortable and familiar to families, e.g., a community center.

3. **Implement a regular policy of reaching out to families** (for example, a home visiting program, coordinated outreach with community agencies and religious groups).

4. **Conduct family-teacher projects and study groups** through which everyone learns more about each others' cultures as well as about biases that influence the communication and relationships among groups.

RESOURCES FOR CHANGE

Models for Effective Instruction

A. School Development Model
Yale Child Study Center
230 S. Frontage Rd.
New Haven, CT 06510
(203) 785-2548
James Comer, Executive Director

The School Development Model has developed programs that address the educational needs of students from low-imcome, culturally, and linguistically diverse backgounds in urban areas. Developed in collaboration with the New Haven, Connecticut Public Schools, the School Development Model focuses on a child's preparation for school and the collaboration between schools and families in a student's academic and social development. Begun in 1968 in two New Haven schools, 168 schools are currently participating and report gains in students' academic and social performance.

B. Accelerated Schools Project
School of Education
Standford University
402 South
Standford, California 94305-3084
(415) 725-1676
Henry Levin, Director

The Accelerated Schools Project aims to create accelerated learning opportunities which bring all students up to and above grade level work. The Accelerated Schools philosophy is centered upon creating a unity of purpose, building on strengths, and empowerment with responsibility to create fundamental changes in school organization, curriculum, and instruction. Project schools undertake a systematic process of change that includes developing a vision statement, undertaking a needs assessment, creating a shared decision-making governance structure, and forming teacher-parent inquiry groups.

The Accelerated Schools Project was piloted at two elementary schools in 1986; today the program is used in 140 elementary schools, including a network in Massachusetts. Its success is reflected in higher test scores, increased attendance, and reduced retention rates.

C. Coalition for Essential Schools

Box 1938
Brown University
Providence, RI 02912
(401) 863-3384.
Theodore Sizer, Director

The Coalition for Essential Schools works for systemic change in secondary schools based on nine Essential Principles. This includes using a curriculum that emphasizes depth over coverage, integrating curriculum across disciplines, reducing teacher-student loads, designing curriculum around essential questions, determining what students should achieve, using exhibitions and portfolios of student work to demonstrate mastery of concepts learned, as well as a performance based diploma process. More than 50 middle and high schools, both public and private, in 20 states (including Massachusetts) are working with the Coalition to bring about such changes.

D. Success for All

Center for Research on Effective Schooling
Johns Hopkins University
3505 N. Charles St.
Baltimore, MD 21218
(301) 338-8249
Robert Slavin, Director

Success for All program provides intervention in the primary grades with the goal of having all students reach grade level work or better by the third grade. The program includes individual tutoring, cooperative learning, intensive reading instruction, and parent/family involvement. Started in 1987-88, the Success for All program is used in 15 schools. Students at these schools perform, in general, at or above grade level, with low-achieving students demonstrating the most impressive gains.

E. Program for Complex Instruction
School of Education
Stanford University
402 South
Stanford, California 94305-3084
Elizabeth Cohen, Director

The Program for Complex Instruction focuses on developing strategies of teaching and support for teachers whose classes are diverse both culturally and in achievement levels. Complex instruction explicitly attempts to eliminate differences in status among students so that those differences do not become barriers to learning. The program, which has been adopted by elementary schools throughout California, groups students with different skills emphasizing explicit instruction in cooperative behaviors/roles and "status interventions." Curriculum is focused upon high-interest material that develops students' higher-order cognitive skills.

F. Learning Research and Development
University of Pittsburgh
Pittsburgh, PA
Loren Resnick, Director

Learning Research and Development advocates "Thinking Curriculum," a restructuring of the way students are taught. The approach, which comes from Resnick's research on how children learn (especially math, science, and literacy), emphasizes rote copying of information and testing and stresses "knowledge instruction," a learning process involving doing, thinking, and reacting that is more compatible with the way children learn in the context of their everyday lives.

G. Project Zero
Harvard University
Graduate School of Education
Longfellow Hall
Cambridge, MA 02138
Howard Gardner, Director
(617) 495-4342

Project Zero has focused its research on redefining notions of intelligence to include multiple intelligences that can be strengthened over time through the provision of varied learning settings

and experiences. Much of the project's work has focused on promoting project-based learning and portfolio and exhibition approaches to assessment that allow students to explore, strengthen, and exhibit multiple intelligences.

H. Efficacy Institute
Lexington, MA
Jeffrey Howard, Director
(617) 862-4390

The Efficacy Institute promotes the educational development of students from culturally and linguistically diverse backgrounds. The Institute believes that all students are capable of achieving at high levels, but that specific societal and school conditions lower students' self-concepts and personal perceptions and beliefs of what they can achieve. The Institute stresses that better performance comes when teachers raise their expectations for all students, when school obstacles to high expectations are removed, and when students are taught to make the commitment to their own intellectual development, understand the internal and external obstacles to them, and learn how to manage them.

I. Center for Educational Renewal
University of Washington
Seattle, Washington
John Goodlad, Director

As Director of the university's Center for Educational Renewal, Goodlad has helped reform teacher training programs. Asserting that a major problem at schools of education is inadequate preparation of teachers for teaching, Goodlad is coordinating a five-year study reviewing current teacher training programs. He has also helped to establish better communication and collaboration between colleges, universities, and public schools.

J. The Foxfire Teacher Outreach
Hilton Smith
Rabun Gap, GA 39568
(404) 746-5318

This project attempts to reach and support individual teachers who are interested in the Foxfire principles as set out in Wigginton's *Sometimes a Shining Moment.* The outreach effort works through

networks that operate from Washington State to New York to Georgia. The outreach effort also publishes a journal, *Hands On*, which chronicles the classroom efforts of teachers involved in experiential learning.

K. The Center for Collaborative Education
1573 Madison Ave
New York, N.Y. 10029
(212) 860-8935

Begun by Deborah Meier, principal of Central Park East, the Center helps other schools learn from the work at Central Park East as well as other progressive efforts in New York City. The center is also coordinating research projects at several schools on alternatives to standardized testing.

Journals for Teachers

Each of the following journals and newsletters is directed toward teachers; most are written by classroom teachers as well.

1. *Rethinking Schools*, 1001 East Keefe Avenue, Milwaukee, WI 53212.

   Published by teachers in the Milwaukee area, the newspaper format journal explores all areas of school restructuring and change.

2. *Hands On*, c/o Hilton Smith, Rabun Gap, GA 30568.

   Published quarterly by the Foxfire Teacher Outreach, this journal chronicles the classroom efforts of teachers involved in experiential learning.

3. *Democracy and Education*, McCracken Hall, Ohio University, Athens, OH 45701.

   Published quarterly by the Institute for Democracy in Education, this is a journal written and edited by teachers. The journal focuses on practices which promote democracy in schools and classrooms.

4. *Fairtest Examiner,* National Center for Fair and Open Testing, Box 1272, Harvard Square Station, Cambridge, MA 02138.

   Focusing mainly on issues of testing reform, this newsletter is a valuable source on the limits and alternatives to standardized testing.

Footnotes

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3 Howard, Jeff. *Getting Smart: The Social Construction of Intelligence*. The Efficacy Institute, Inc., 1990; Bempechat, J. and Dweck, C. "Children's theories of intelligence: consequences for learning." *Learning and Motivation in the Classroom*, Paris, S.G., Olson, G.M., Stevenson, H.W., eds. Hillsdale, NJ: Erlbaum, 1983.

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